



# Tennessee Consolidated Retirement System

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Actuarial Funding Valuation – Legacy Pension Plans  
Valuation Date: June 30, 2021

December 3, 2021

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## ► Valuation Purpose

- Determine employer contribution rates for Legacy Pension Plans  
(TCA Section 8-37 Part 3)
  - Valuation Date: 6/30/2021
  - New Employer Rates Effective: 7/1/2022
- Examine financial health of plan
- Separate process and reporting for GASB 67/68

## ► Valuation Background

- Experience Study
  - Mandated by statute
  - Most recent study reviewed 2016 – 2020 period
  - New assumptions adopted (applied to 6/30/2021 valuation)
  - Performed every 4 years
  - Next study will review 2020 – 2024 period
- Actuarial Audit
  - Commonly done for public plans
  - Most recent audit performed in 2020
  - Endorsed methodology and results
  - Performed every 10 years

## ► System Overview – Legacy Plans (as of June 30, 2021)

- Defined Benefit System
  - State employees, higher education and K-12 teachers hired prior to July 1, 2014
  - 600+ local governments (participation is optional and costs are valued individually)
- Demographic Data
  - 167,000 Active Participants
  - 170,000 Retired Participants (\$2.9 Billion in annual payments)
- Market Value of Assets -- \$64.4 Billion
- Funding Basis is Traditionally Conservative

## ► System Overview – Plan Design

	Legacy Plan	Hybrid Plan*
Benefit Multiplier	1.575%	1.0%
Full Retirement	Age 60/30 YOS	Age 65/Rule of 90
Early Retirement	Age 55/25 YOS	Age 60/Rule of 80
Employee Contributions	State-0%;TCH-5%	State-5%;TCH-5%
Cost of Living Adjustment	CPI (Max 3%)	CPI (Max 3%)
Defined Contribution Component	None	5% From Employer
Stabilization Reserve	None	Yes
Cost Controls	None	9% Employer Target
Unfunded Liability Controls	None	Limit: 12.5% of State Indebtedness

\*New Hybrid Plan effective only for new hires after 7/1/2014

## ► System Overview – Plan Design

- Hybrid Plan began 7/1/2014 with new employees only
- All employees hired prior to 7/1/2014 continue in Legacy Plans
- Cost savings of Hybrid Plan will be gradual over time
- Legacy Plans must still be managed and funded adequately
- Remainder of presentation related to Legacy Plans

## ► Active Membership Comparison by Number (Legacy Plans)

Group	2020	2021	Pct Change
Teachers	53,582	50,944	(4.9)%
State	34,381	32,078	(6.7)
Political Sub	82,979	83,533	0.7
Others	647	618	(4.5)
Total	171,589	167,173	(2.6)%

## Active Membership Comparison by Compensation (Legacy Plans)

Group	2020	2021	Pct Change
Teachers	\$3,219,651,049	\$3,171,703,936	(1.5)%
Average	60,088	62,259	3.6
State	2,027,042,151	1,932,535,857	(4.7)
Average	58,958	60,245	2.2
Political Sub	3,047,597,420	3,122,134,065	2.4
Average	36,727	37,376	1.8
Others	80,787,728	79,014,888	(2.2)
Average	124,865	127,856	2.4
Total	\$8,375,078,348	\$8,305,388,746	(0.8)%
<b>Average</b>	<b>\$48,809</b>	<b>\$49,681</b>	<b>1.8%</b>



## ▶ Retired Member Comparison by Number (Legacy Plans)

Group	2020	2021	Pct Change
Teachers	52,913	53,785	1.6%
State	57,400	58,258	1.5
Political Sub	52,799	55,067	4.3
Others	3,238	3,145	(2.9)
Total	166,350	170,255	2.3%

## Retired Member Comparison by Benefit Amount (Legacy Plans)

Group	2020	2021	Pct Change
Teachers	\$1,324,474,551	\$1,361,928,969	2.8%
Average	25,031	25,322	1.2
State	930,545,062	958,753,455	3.0
Average	16,212	16,457	1.5
Political Sub	464,367,885	493,042,646	6.2
Average	8,795	8,954	1.8
Others	99,982,321	98,533,603	(1.4)
Average	30,878	31,330	1.5
Total	\$2,819,369,819	\$2,912,258,673	3.3%
<b>Average</b>	<b>\$16,948</b>	<b>\$17,105</b>	<b>0.9%</b>

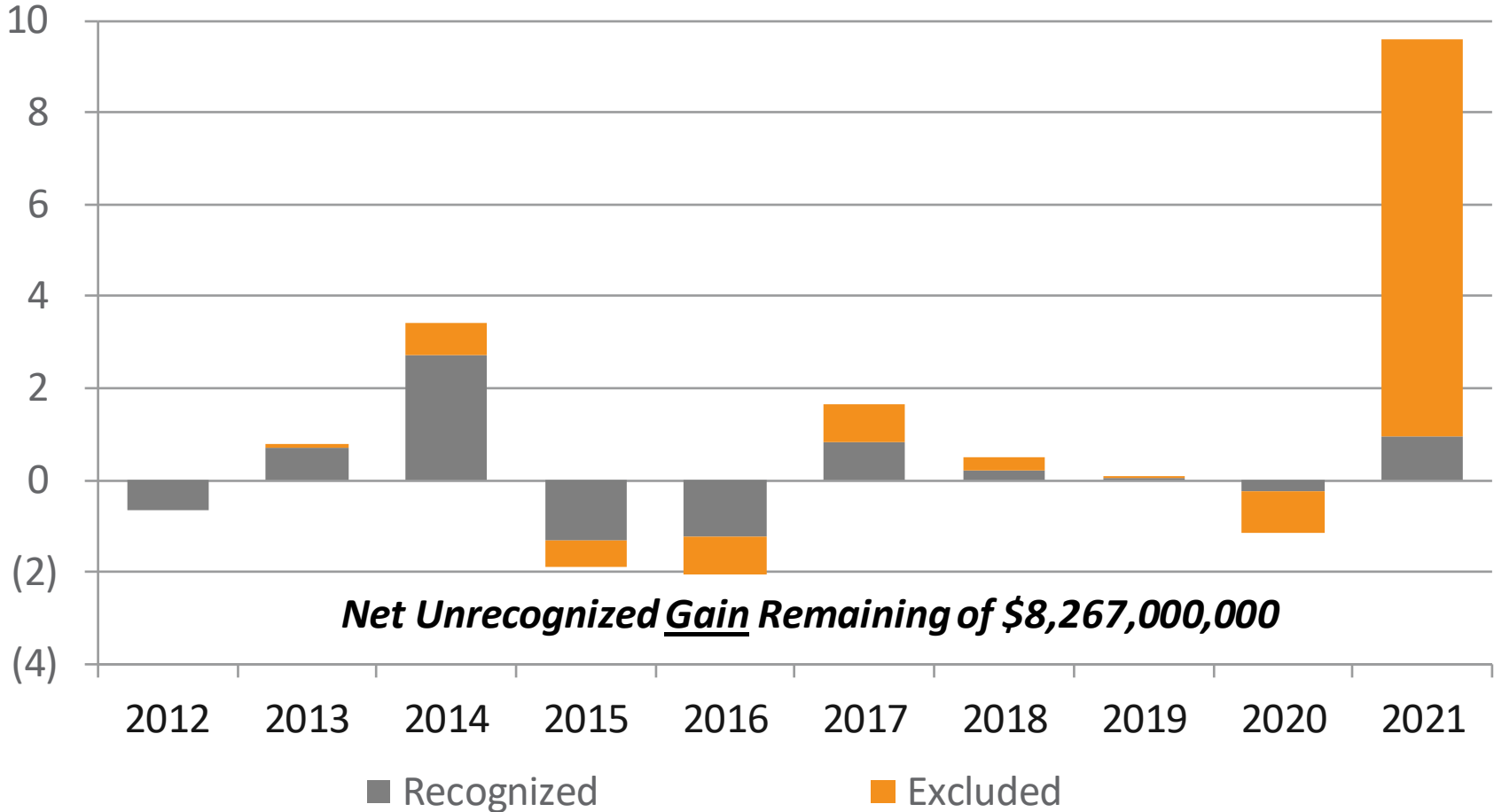
## ► Valuation Asset Method

- Use “smoothing” device to limit contribution volatility
- Phase-in excess or deficit earnings compared to the earnings assumption ratably over ten-year period
- Utilize 80%/120% corridor
- Resulting value is “Actuarial Value of Assets”
- Actuarial Value of Assets is only used to determine contribution rates pursuant to the TCRS funding policy (Market Value of Assets used for GASB reporting)

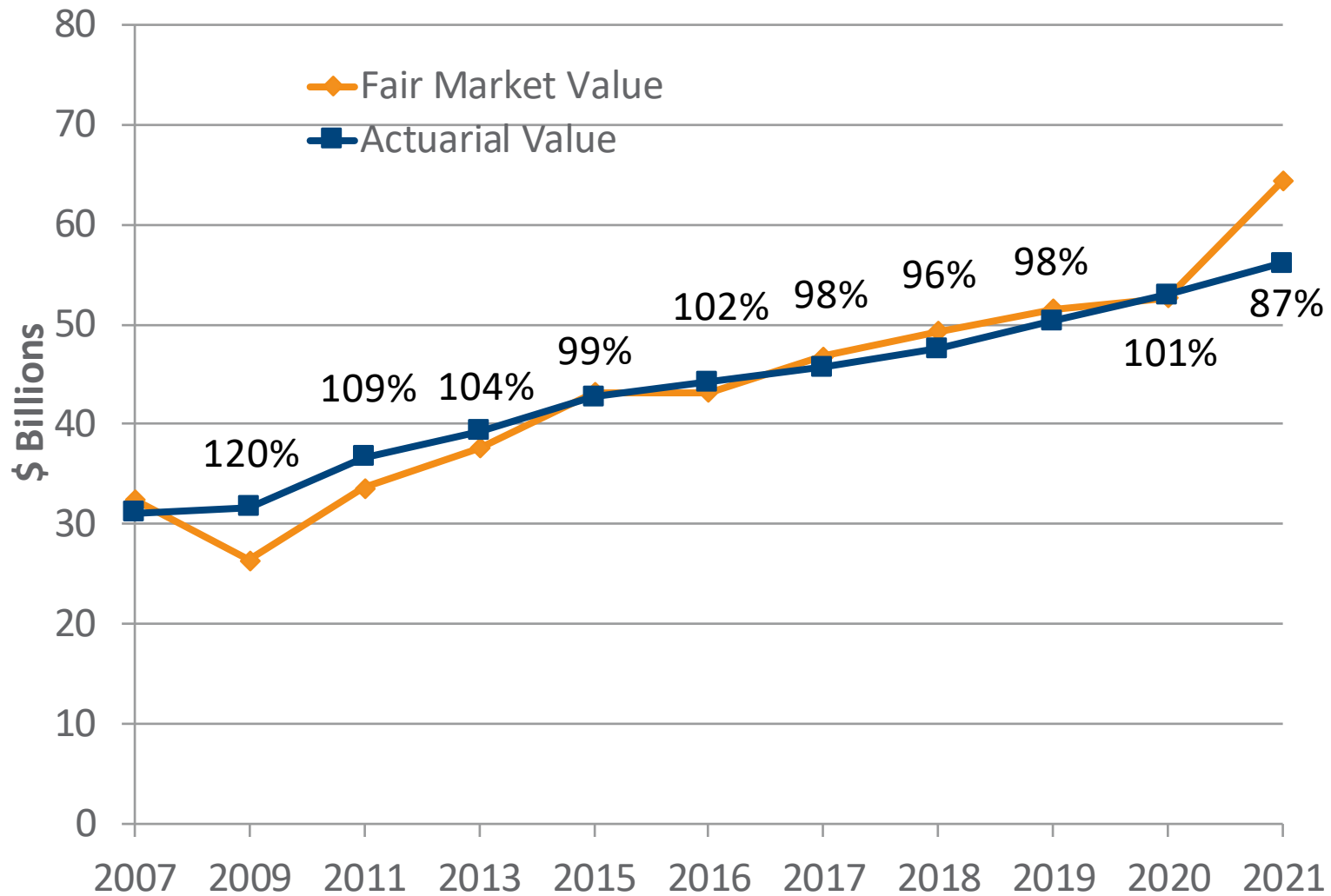
# Valuation Asset Gains and Losses (Legacy Plans)

Return: 5.6% 9.9% 16.7% 3.3% 2.8% 11.4% 8.2% 7.5% 4.9% 25.6%

\$ Billions



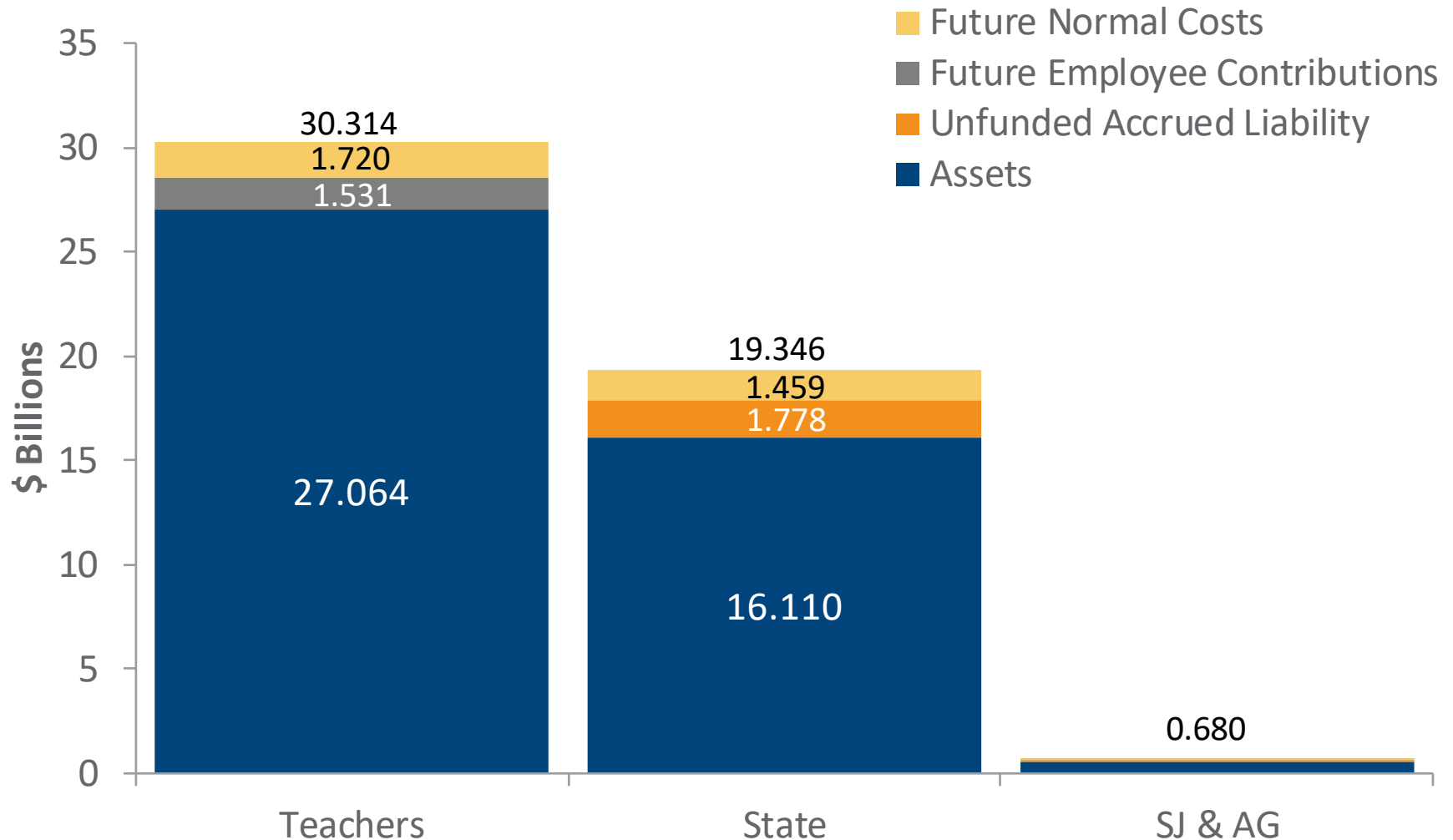
## Valuation Asset Comparison to Market (Legacy Plans)



## ► Contribution Rate Determination

- Entry Age Normal funding method
- Normal Cost + Amortization of Unfunded Accrued Liability (UAL) + Administrative Fee
- Level dollar amortization of Unfunded Accrued Liability
- Amortization periods adjusted each year to manage rate changes and are within requirements of state law and pursuant to TCRS funding policy
- Local governments will be allowed to amortize the UAL pursuant to the TCRS funding policy

## Present Value of Benefits – Legacy Plans (June 30, 2021)



## **Unfunded Accrued Liability (UAL) – Legacy Plans** **(Based on Actuarial Value of Assets)**

	2020 UAL	2020 Funded Ratio	2021 UAL	2021 Funded Ratio
Consolidated State	\$1,483,368,696	91.2%	\$1,777,978,002	90.1%
State Judges and Attorneys General	58,915,438	89.9%	65,431,508	89.5%
Total State	\$1,542,284,134	91.1%	\$1,843,409,510	90.0%
Contributory Teachers	(917,817,386)	103.7%	(327,206,312)	101.2%
Total	\$624,466,748	98.5%	\$1,516,203,198	96.6%

The results for the Political Subdivisions are in progress and will be provided at a later date.



## **Unfunded Accrued Liability (UAL) – Legacy Plans** **(Based on Market Value of Assets for GASB Purposes)**

	2020 UAL	2020 Funded Ratio	2021 UAL	2021 Funded Ratio
Consolidated State	\$1,576,226,913	90.6%	(\$594,703,174)	103.3%
State Judges and Attorneys General	62,083,413	89.3%	(17,144,942)	102.7%
Total State	\$1,638,310,326	90.6%	(\$611,848,116)	103.3%
Contributory Teachers	(762,573,694)	103.1%	(4,313,240,367)	116.1%
Total	\$875,736,632	97.9%	(\$4,925,088,483)	110.9%

The results for the Political Subdivisions are in progress and will be provided at a later date.

## ► Amortization of Unfunded Accrued Liability (UAL)

- New layer of UAL created with each valuation
- Effective Amortization Period for total UAL (in years)

	<u>2020</u>	<u>2021</u>
Teachers	N/A*	N/A*
State	7.67	10.01
Judges & AG	5.47	6.63

- Amortization periods are lower than many other states
- Full detail of amortization schedule by layer on following page

\* Teachers have negative total UAL in 2020 and 2021 but still have a positive amortization due to prior positive layers that are still being amortized.

# Amortization of Unfunded Accrued Liability (UAL) (Detailed Schedule of Periods)

## Amortization periods for UAL – as of June 30, 2021

	Teachers	State	Judges & AG
UAL Layer 1 (2013)	N/A	6.20	6.40
UAL Layer 2 (2015)	14.00	14.00	14.00
UAL Layer 3 (2016)	15.00	15.00	15.00
UAL Layer 4 (2017)	1.00	16.00	16.00
UAL Layer 5 (2018)	17.00	17.00	17.00
UAL Layer 6 (2019)	18.00	18.00	18.00
UAL Layer 7 (2020)	19.00	19.00	19.00
UAL Layer 8 (2021)	20.00	20.00	20.00

## ► Contribution Rate Summary – Percent of Payroll (Legacy Plans – Employer Rate)

	<u>2020</u>	<u>2021</u>
Contributory Teachers	10.30%	8.69%
Consolidated State*	20.65%	22.03%
State Judges and Attorneys General	25.94%	26.00%

\*The Consolidated State contribution rate includes the costs attributable to bridge and service retirement benefits for public safety officers. In practice, a separate contribution rate is determined for General Employees and Public Safety Officers.

## ► Contribution Rate Summary – Projected Contribution (Legacy Plans – Employer Rate)

	2020	2021
Contributory Teachers	\$331,624,058	\$275,621,072
Consolidated State*	\$419,239,035	\$426,218,747
State Judges and Attorneys General	\$20,056,955	\$19,928,240

\*The Consolidated State contribution rate includes the costs attributable to bridge and service retirement benefits for public safety officers. In practice, a separate contribution rate is determined for General Employees and Public Safety Officers.

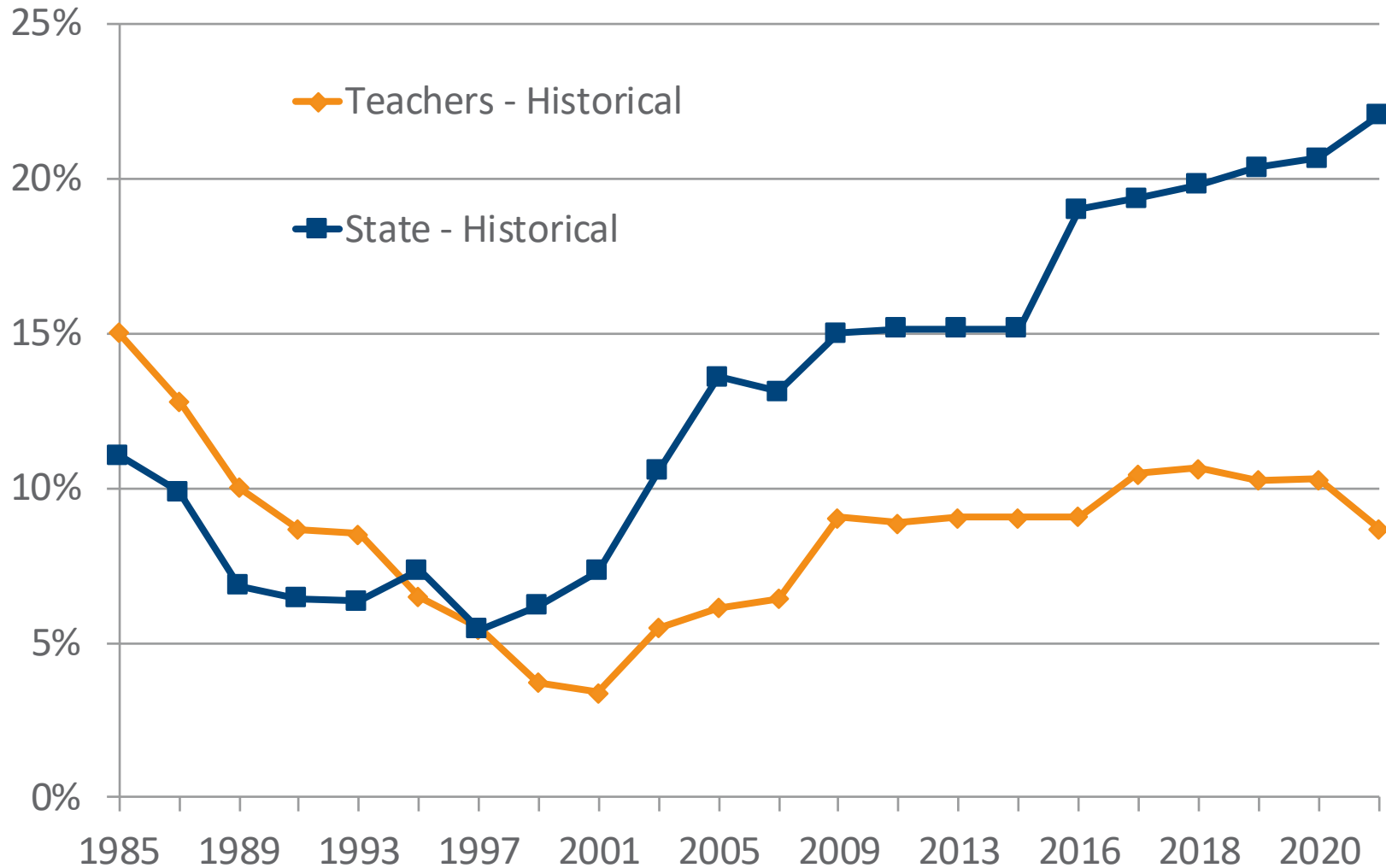
## ► Employer Contribution Rate Reconciliation (Legacy Plans)

	Teachers	State
<b>2020 Employer Contribution Rate</b>	<b>10.30%</b>	<b>20.65%</b>
Asset Experience	(1.43)	(1.43)
Salary Experience	(0.14)	(0.17)
Cost of Living Escalation	(0.36)	(0.42)
Turnover Impact on Total Payroll	0.06	0.37
Delay in Contribution Rate Change	0.00	0.02
Other Experience and Census Changes	(0.16)	(0.05)
Changes in Assumptions (see next slide)	6.13	5.34
Completed Amortization of UAL Layer	(5.71)	0.00
Re-amortization of UAL (period change)	0.00	(2.28)
<b>2021 Employer Contribution Rate</b>	<b>8.69%</b>	<b>22.03%</b>

## ► Detail of Changes in Assumptions (Legacy Plans)

	<u>Teachers</u>	<u>State</u>
Discount Rate	5.84%	5.22%
Cost of Living Adjustments (COLA)	(1.00)	(0.97)
Social Security Taxable Wage Base	0.02	0.01
Turnover Rates	0.00	(0.12)
Retirement Rates	(0.08)	0.25
Pre-Retirement Mortality	0.04	0.06
Post-Disability Mortality	0.05	0.08
Post-Retirement Mortality	1.26	0.81
<b>Total Changes in Assumptions</b>	<b>6.13%</b>	<b>5.34%</b>

## Employer Contribution Rate History (Legacy Plans)



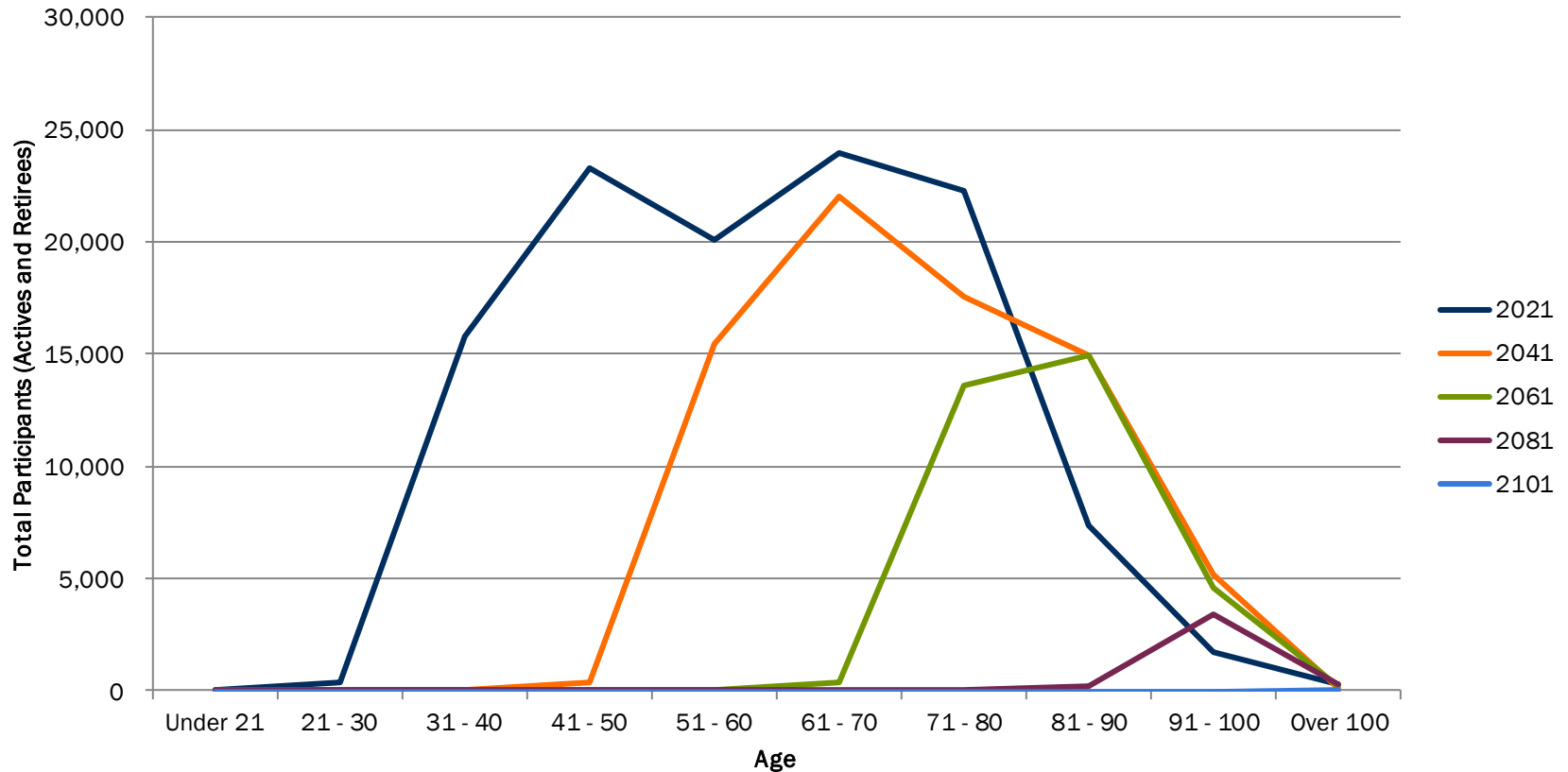


## ► Future Considerations and Potential Challenges

- Closed Plan (no new hires enter the plan)
  - Total payroll base used to determine contribution % will decrease
  - Level \$ UAL amortization payments will grow as a % of payroll
- Recognition of prior investment gains and losses
- Contribution rate and funded status volatility risk
  - Investment returns after June 30, 2021
  - Mortality improvements/salary growth/COLA
- Future assumption changes (discount rate, mortality, etc.)

# Legacy Teacher Participants by Age

TCRS Legacy Plan - Teacher  
80-Year Participant Age Band Projection

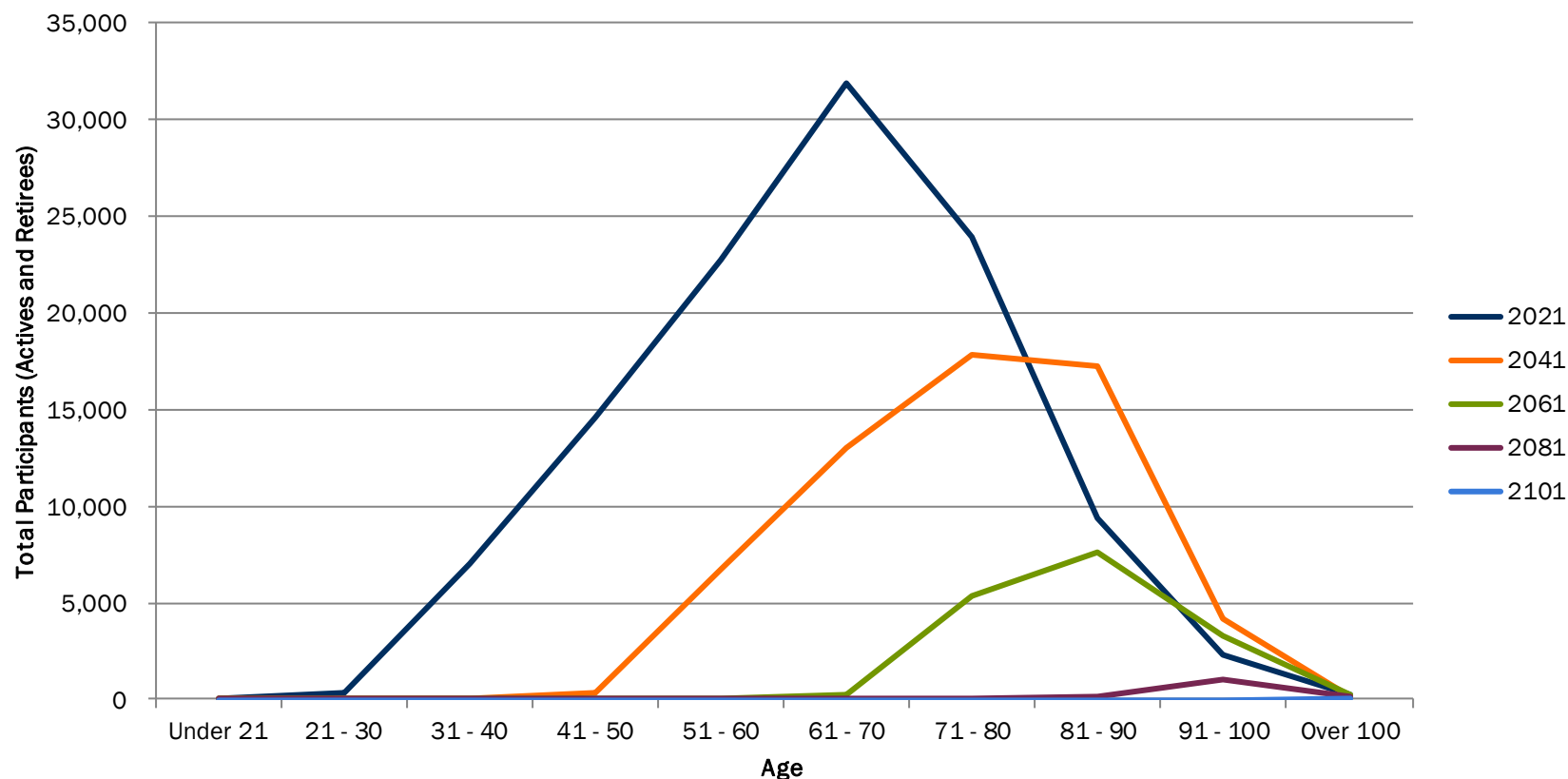


## Total Participants by Year

2021: 115,318    2041: 75,720    2061: 33,785    2081: 3,904    2101: 1

# Legacy State Participants by Age

TCRS Legacy Plan - State  
80-Year Participant Age Band Projection

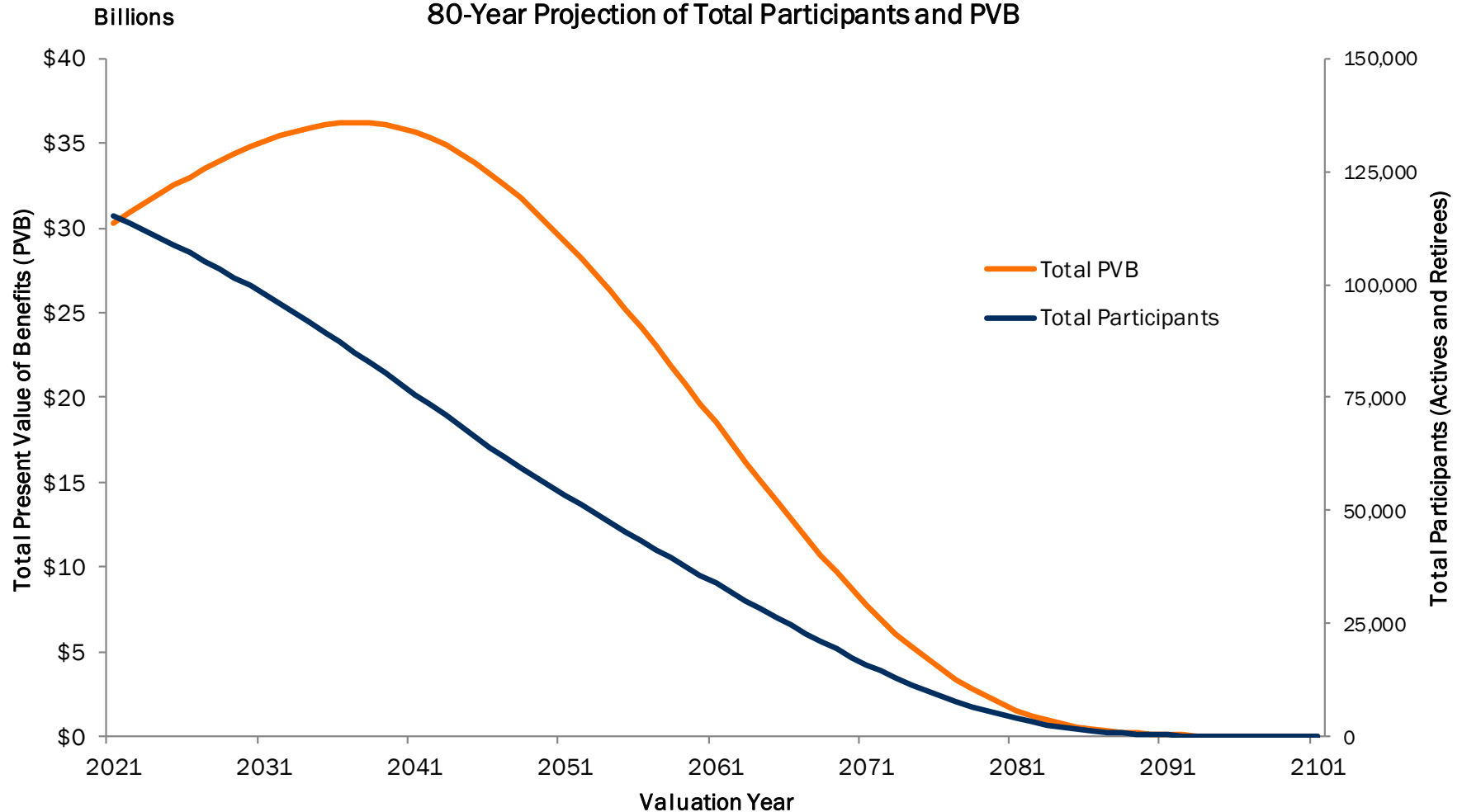


## Total Participants by Year

2021: 112,502    2041: 59,288    2061: 16,816    2081: 1,328    2101: 1

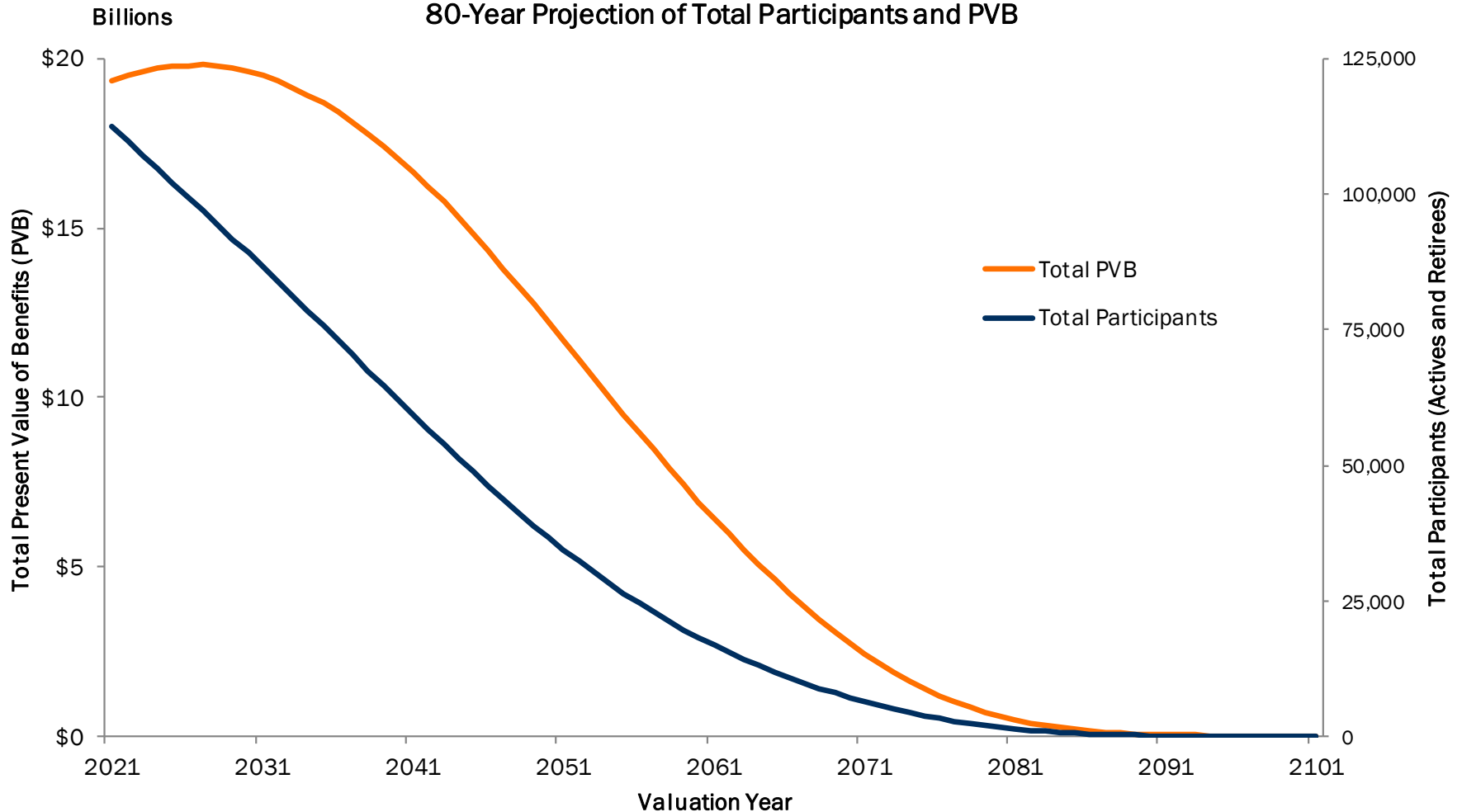
# Legacy Teacher – Projection of Participants and PVB

**TCRS Legacy Plan - Teacher**  
80-Year Projection of Total Participants and PVB



# Legacy State – Projection of Participants and PVB

**TCRS Legacy Plan - State**  
80-Year Projection of Total Participants and PVB



## ► Certification

This report has been prepared exclusively for TCRS to provide Legacy Plan employer contribution rates. Census data, plan provisions, and actuarial assumptions and methods will be documented in the TCRS actuarial valuation funding report as of June 30, 2021. Findley is not responsible for consequences resulting from the use of any part of this report without prior authorization and approval. Determinations for other purposes may be different from the results shown in this report. This report provides actuarial advice and does not constitute legal, accounting, tax, or investment advice. This report has been prepared under the supervision of Justin C. Thacker, a member of the American Academy of Actuaries, a Fellow of the Society of Actuaries, and a consulting actuary with Findley of Brentwood, Tennessee, who has met the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions herein. To the best of our knowledge this report has been prepared in accordance with generally accepted actuarial standards, including the overall appropriateness of the analysis, assumptions, and results and conforms to appropriate Standards of Practice as promulgated from time to time by the Actuarial Standards Board, which standards form the basis for the actuarial report. We are not aware of any direct or material indirect financial interest or relationship that could create, or appear to create, a conflict of interest that would impair the objectivity of our work.



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December 3, 2021

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Date